

commercial wireless service providers are Participating CMS Providers.⁶ As of November 30, 2019, under Section 10.450(a) of the Commission's rules, Participating CMS Providers must deliver WEA Alert Messages that are specified by a circle or polygon to an area that matches the specified circle or polygon.⁷ A Participating CMS Provider will be considered to have matched the target area when it delivers an Alert Message to 100 percent of the target area with no more than 0.1 of a mile overshoot.⁸ We refer to this precise level of geotargeting as "enhanced geotargeting." Section 10.450(a) will further provide that, where the Participating CMS Provider's network infrastructure is technically incapable of matching the specified target area, then that Participating CMS Provider must deliver the Alert Message to an area that meets the foregoing geotargeting standard (*i.e.*, an area that "best approximates" the target area) on and only on those aspects of its network infrastructure that are incapable of matching the target area.⁹

3. USGS issues EEWs using "ShakeAlert," a network of seismic sensors that detects earthquakes before they cause damage, and generates alerts designed to quickly encourage people to take protective measures.¹⁰ ShakeAlert specifies the alert's target delivery area using polygons, and thus triggers the Commission's enhanced geotargeting requirement.¹¹ According to USGS, a key component of ShakeAlert is the delivery of alerts to mobile phones using WEA.¹² USGS contends, however, that the process necessary to achieve enhanced geotargeting would introduce critical delays in the delivery of EEWs to the public that would render EEWs less effective.¹³ USGS states that for each second of delay in alert receipt, the earthquake zone expands by two miles,¹⁴ but that those who receive the alert within sufficient time to take protective action can substantially reduce their risk of injury.¹⁵ According to USGS, when it comes to EEWs, "time is of the essence."¹⁶

4. ATIS has developed standards to comply with the Commission's enhanced geotargeting requirement for WEA using a technique known as device-based geofencing.¹⁷ To perform a geofence, Participating CMS Providers must transmit additional data to WEA-capable mobile devices regarding the specified geographic target area. This target-area data can include up to 100 coordinates.¹⁸ In the *Second WEA R&O*, the Commission reasoned that transmitting this additional data could delay Alert Message

⁶ See *Commercial Mobile Alert System*, PS Docket No. 07-287, Third Report and Order, 23 FCC Rcd 12561, 12575, para. 32 (2008) (stating the requirements for wireless providers volunteering to participate in WEA).

⁷ See 47 CFR § 10.450(a).

⁸ *Id.*

⁹ *Id.*

¹⁰ See USGS, ShakeAlert, <https://www.shakealert.org/> (last visited Aug. 9, 2019).

¹¹ *Id.* at 2. The USGS explains that specifying the target area by using a geocode (a short series of numbers that represents a geographic entity such as a state or county) would bypass the geotargeting requirement, but that it would result in significant over-alerting. USGS notes, for example, that San Bernardino County, California is 20,105 square miles alone. See USGS August 23 Letter at 2.

¹² See USGS August 23 Letter at 1.

¹³ See USGS June 21 Letter at 1.

¹⁴ See *id.*

¹⁵ See USGS August 23 Letter at 1.

¹⁶ USGS June 21 Letter at 2.

¹⁷ See generally Alliance for Telecommunications Industry Solutions (ATIS), Wireless Emergency Alerts (WEA) 3.0: Device-Based Geo-Fencing, ATIS-0700041 (2019).

¹⁸ See *id.* at 6.

receipt by up to 15.36 seconds.¹⁹ According to the more recently adopted ATIS standard for device-based geofencing, however, the geofencing process can take as long as 255 seconds (*i.e.*, 4 minutes and 15 seconds).²⁰ USGS asserts that use of this technological solution for more targeted alerting will, in the case of USGS ShakeAlert, “delay alert delivery so as to reduce or nullify the value of earthquake early warning alerts”²¹

5. In comparison to the over 4-minute delay potentially attendant to EEW delivery using device-based geofencing, USGS claims that Participating CMS Providers can deliver an EEW to an area that “best approximates” the target area in as quickly as in 4 seconds (but more typically in 13 seconds).²² The USGS reasons that, if Participating CMS Providers deliver EEWs using the foregoing best approximates geotargeting standard, “WEA alerts will arrive before strong shaking in some cases.”²³

6. USGS explains that it has developed a solution to address this issue, in partnership with the Department of Homeland Security’s Federal Emergency Management Agency (FEMA), which administers the Integrated Public Alert and Warning System (IPAWS) through which all WEA alerts are authenticated, validated, and delivered to participating CMS Providers.²⁴ According to USGS and FEMA, subject to approval by the Commission, FEMA could institute a process whereby WEA Alert Messages initiated by the USGS that include designated earthquake-related event and handling codes could be transmitted to Participating CMS Providers with an instruction to forego enhanced geotargeting and instead be delivered to an area that best approximates USGS’ targeted polygonal area.²⁵ Specifically, USGS must initiate an alert with an event code “EQW” and a special handling code “Earthquake” to forego enhanced geo-targeting.²⁶ ATIS has supported this solution by adopting a device-based geofencing standard that allows these Alert Messages to bypass enhanced geotargeting, so long as regulatory policy permits such an approach.²⁷

¹⁹ See Wireless Emergency Alerts; Amendments to Part 11 of the Commission’s Rules Regarding the Emergency Alert System, *Second Report and Order and Second Order on Reconsideration*, PS Docket Nos. 15-91, 15-94, 33 FCC Rcd 1320, 1326, para. 8 at n.40 (2018) (*WEA Second R&O*); see also Alliance for Telecommunications Industry Solutions, Feasibility Study for LTE WEA Message Length, ATIS -0700023, at 13 (2015).

²⁰ See Alliance for Telecommunications Industry Solutions (ATIS), Wireless Emergency Alerts (WEA) 3.0: Device-Based Geo-Fencing, ATIS-0700041, at 10 (2019).

²¹ USGS August 23 Letter at 1.

²² USGS August 23 Letter at 2. USGS’ claim is based on two end-to-end WEA tests that it conducted in coordination with the California Governor’s Office of Emergency Services. See *id.* See also Improving Wireless Emergency Alerts and Community-initiated Alerting, *Order*, PS Docket No. 15-91, 34 FCC Rcd 263 (2019); Improving Wireless Emergency Alerts and Community-initiated Alerting, *Order*, PS Docket No. 15-91, DA 19-538 (Jun. 7, 2019) (granting USGS’ requests for waiver to conduct these tests).

²³ *Id.* at 2.

²⁴ USGS August 23 Letter at 1-2.

²⁵ See *id.* at 2 (explaining that “ShakeAlert uses eight-sided polygons (rather than counties or circles) in its Common Alert Protocol (CAP) messages to the IPAWS gateway to define the area that is expected to experience damaging shaking for earthquakes of magnitude 5.0 or larger” and that “for small events these polygons approximate circles”). See also *id.* (explaining that “use of county-level alert areas could bypass the geotargeting requirement and not require a waiver, but this is not practical for ShakeAlerts because it would result in significant over-alerting”).

²⁶ Alert originators specify “event codes” as part of the alert origination process to designate their alert as belonging to one among of the Alert Message classifications used for WEA or one of the categories of alerts that EAS Participants transmit. See 47 CFR § 11.31; see also 47 CFR § 10.400. FEMA uses special handling codes in this context as well. EEW is not an event code.

²⁷ See Alliance for Telecommunications Industry Solutions (ATIS), Wireless Emergency Alert (WEA) 3.0 Federal Alert Gateway to CMSP Gateway Interface Specification, ATIS-0700037.v002, at 80 (2019) (standardizing (continued....))

III. DISCUSSION

7. Under Section 1.3 of the Commission's rules, a provision of the agency's rules "may be waived by the Commission on its own motion or on petition if good cause therefor is shown."²⁸ The Commission may find good cause to offer a waiver, "if special circumstances warrant a deviation from the general rule and such deviation will serve the public interest."²⁹ Under Section 1.925(b)(3)(i) of the Commission's rules, the Commission may grant a rule waiver implicating wireless service when two requirements are satisfied: (1) the underlying purpose of the rule would not be served or would be frustrated by application to the instant case, and (2) a grant of the requested waiver would be in the public interest.³⁰ We grant USGS' request for waiver to the extent stated herein because it meets both of these standards. This waiver applies only to EEWs initiated by USGS with an event code "EQW" and a special handling code "Earthquake," as well as to any Public Safety Message USGS issues in connection with such an Alert Message. Pursuant to this waiver, Participating CMS Providers may forego enhanced geotargeting and deliver EEW Alert Messages initiated by USGS to an area that "best approximates" the target area.³¹

8. Further, we agree with USGS that EEWs could be sent more swiftly using WEA if Participating CMS Providers were to forego enhanced geotargeting. Given the characteristics and impacts of earthquakes, we are persuaded that the time saved by best approximating the target area would deliver significant public interest benefits of the kind contemplated by the Commission's rules. According to USGS, the protective action that is carried in the WEA message is "*Earthquake! Expect shaking. Drop, cover, hold on. Protect yourself now.*"³² USGS states that, "[o]n average it takes people about 9 seconds to drop, cover, and hold on and doing so can substantially reduce injury."³³ USGS submits that "the ShakeAlert system detects significant earthquakes sufficiently fast that alerts can reach

(Continued from previous page) _____

Participating CMS Provider response to a device-based geofencing bypass instruction indicated by the Federal Alert Gateway).

²⁸ 47 CFR § 1.3.

²⁹ See *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) (citing *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969), *aff'd*, 459 F.2d 1203 (1973), *cert. denied*, 409 U.S. 1027 (1972)).

³⁰ Under the second prong of Section 1.925(b)(3), the Commission may grant a request for a rule waiver when, in view of the unique or unusual factual circumstances of the case, application of the rule(s) would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative. 47 CFR § 1.925(b)(3)(ii).

³¹ Under the "best approximate" geotargeting standard, Participating CMS Providers use "network-based cell broadcast techniques, such as algorithm-based facility selection and cell sectorization, to geotarget Alert Messages to polygonal areas more granular than" the county level. See *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, *Report and Order and Further Notice of Proposed Rulemaking*, 31 FCC Rcd 11112, 11148, para. 54 (2016) (*WEA R&O and FNPRM*).

³² USGS August 23 Letter at 2 (citing State-Of-The-Art Knowledge of Protective Actions Appropriate for Earthquake Early Warning: Michele M. Wood, with Maximilian Dixon, Earthquake Program Manager at Washington State Military Department, Emergency Management Division; Althea Rizzo, Geologic Hazards Program Coordinator, Oregon Emergency Management Agency; Pascal Schuback, Executive Director, Cascadia Region Earthquake Workgroup; Jennifer Thamer, Director, Nusura, Inc.; Brian Terbush, Earthquake/Volcano Program Coordinator at Washington State Military Department, Emergency Management Division, October 29, 2018).

³³ USGS August 23 letter at 2 (citing Porter, K. A. and J.L. Jones, 2017, How Many Injuries Can Be Avoided in the HayWired Scenario Through Earthquake Early Warning and Drop, Cover, and Hold On?, in Detweiler, S.T. and Wein, A.M. eds., 2018. *The HayWired Earthquake Scenario--earthquake Hazards*. US Department of the Interior, US Geological Survey, Scientific Investigations Report 2017-5013-I-Q).

many people seconds to several tens of seconds before shaking arrives.”³⁴ Accordingly, our grant of a waiver would permit the emergency information to reach the target audience while there remains time to act on the information, thereby appreciably increasing the number of lives saved, and decreasing or mitigating the number of injuries and the extent of loss of property, respectively.³⁵ We credit USGS’s expertise regarding earthquakes and are unaware of any other potential methods that would permit precise geo-targeting and yet supply the significant benefits of this additional time by the current November 30, 2019 effective date of the new rule.³⁶

9. Thus, we believe that granting this limited waiver of the enhanced geotargeting requirement would not frustrate the purpose of the enhanced geotargeting requirement. The Commission required enhanced geotargeting despite the potential for some additional latency because of the critical importance of geotargeting accuracy to encourage alert originators to use WEA, to enable alert originators to use WEA to more effectively motivate consumers to take protective actions, and to reduce the potential for subscriber opt out due to alert fatigue.³⁷ As discussed above, however, based on the latest ATIS information about the extent of latency and its effect on alerts relating to earthquakes, application of the rule to USGS “ShakeAlerts” would frustrate the overriding purpose of all the WEA rules—ensuring that the public receives the type of alerts that optimize the protection that advance warnings can provide. We do not believe that USGS-issued earthquake alerts will be so frequent that there is potential for alert fatigue. Based on data obtained from FEMA, the USGS issued no EEW alerts since connecting to IPAWS and only two test EEW alerts in 2019.³⁸ Further, the USGS EEWs will still be transmitted to a target area described by a polygon, substantially reducing the degree of over-alerting as compared to county-level alerting, which the Commission has determined could slow consumers’ response to alerts that emergency managers intend for them and incentivize consumers to opt-out of receiving WEA alerts altogether.³⁹ Accordingly, we find that the underlying purpose of Section 10.450(a) is served by granting Participating CMS Providers this waiver.

10. Finally, we also find good cause to extend this waiver, as requested by USGS,⁴⁰ to Public Safety Messages initiated by USGS in connection with EEWs.⁴¹ Extending Participating CMS Providers’

³⁴ *Id.*

³⁵ See USGS, ShakeAlert, <https://www.usgs.gov/natural-hazards/shakealert> (last visited Sept. 5, 2019) (“The USGS ShakeAlert . . . System uses earthquake science and technology to detect significant earthquakes quickly so that alerts can reach many people before shaking arrives. The seconds to tens of seconds of advance warning can allow people and systems to take actions to protect life and property from destructive shaking”); see also Email from Douglas Given, Geophysicist, USGS Earthquake Early Warning Coordinator, U.S. Geological Survey, to Maureen Bizhko, Attorney Advisor, Federal Communications Commission (Sep. 12, 2019) *citing* Porter, K. A. and J.L. Jones, 2017, How Many Injuries Can Be Avoided in the HayWired Scenario Through Earthquake Early Warning and Drop, Cover, and Hold On?, in Detweiler, S.T. and Wein, A.M. eds., 2018. The HayWired Earthquake Scenario--earthquake Hazards. US Department of the Interior, US Geological Survey, Scientific Investigations Report 2017–5013–I–Q, https://pubs.usgs.gov/sir/2017/5013/sir20175013ah_v1.2.pdf.

³⁶ Indeed, the precise geo-targeting required by the new rule will have required a lead time of nearly two years for Participating CMS Providers, FEMA, and other affected agencies to implement. See *WEA Second R&O*, 33 FCC Rcd at 1330-1332, paras. 12-14.

³⁷ See *Second WEA R&O*, 33 FCC Rcd at 1326, at 1324, para. 6.

³⁸ Email from Mark Lucero, Engineering Branch Chief, IPAWS Program Management Office, to Nicole McGinnis, Deputy Chief, PSHSB. FCC (Sept. 6, 2019, 9:33pm EDT) (Lucero Email).

³⁹ See *Second WEA R&O*, 33 FCC Rcd at 1326, at 1324, para. 6.

⁴⁰ See USGS August 23 Letter at 4 (stating that “when ShakeAlert begins public alerting, it will also send follow-up messages after each alert with final information about the earthquake that caused the alert and where to get additional information or to cancel the alert if it was issued in error”).

waiver to Public Safety Messages initiated by USGS will enable USGS to transmit these essential advisories to the same geographic footprint as the initial EEW. USGS indicates ShakeAlert will send follow-up information using the “Public Safety Message” category after each alert, including where to get additional information.⁴² We believe it could cause confusion and panic if consumers were to receive follow-up information about how to protect themselves in the aftermath of an earthquake without first having received notice that an earthquake had occurred.

11. We are not persuaded at this time that it would be in the public interest to extend this waiver to Alert Messages other than USGS-initiated EEWs and related Public Safety Messages. USGS’ rationale for allowing their EEWs and earthquake-related Public Safety Messages to forego enhanced geotargeting is based on the exigencies created by earthquakes and the USGS-administered system to detect them and distribute information about them as quickly as possible, while minimizing over-alerting. According to FEMA, USGS is the only entity that is authorized to initiate earthquake early warnings over WEA.⁴³

IV. ORDERING CLAUSE

12. Accordingly, IT IS ORDERED that, as of the rule amendment’s effective date (November 30, 2019), pursuant to Section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and Section 1.3 of the Commission’s rules, 47 CFR § 1.3, Section 10.450(a) of the Commission’s rules IS WAIVED to the extent necessary for Participating CMS Providers to forego enhanced geotargeting for alerts initiated by USGS with event code “EQW” and special handling code “Earthquake,” and for Public Safety Messages that USGS issues in connection with such alerts, and to geotarget them pursuant to the “best approximate” geotargeting standard. This action is taken under delegated authority pursuant to Sections 0.191 and 0.392 of the Commission’s rules, 47 CFR §§ 0.191 and 0.392. This waiver SHALL BE EFFECTIVE on November 30, 2019.

FEDERAL COMMUNICATIONS COMMISSION

Lisa M. Fowlkes
Chief
Public Safety and Homeland Security Bureau

(Continued from previous page) _____

⁴¹ See *WEA R&O and FNRPM*, 31 FCC Rcd at 11126, para. 18 (defining a Public Safety Message as “an essential public safety advisory that prescribes one or more actions likely to save lives and/or safeguard property”).

⁴² USGS August Letter at 4.

⁴³ See Lucero Email.